

## **Appendix C.**

### **U.S. Caribbean and Western Pacific Territorial Surveys**

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## **SECTION A: GENERAL REQUIREMENTS**

### **BACKGROUND**

The MRFSS was conducted in the U.S. Caribbean (Puerto Rico and the U.S. Virgin Islands) and the U.S. Western Pacific territories (Guam, American Samoa, and the New Commonwealth of the Northern Mariana Islands or CNMI) in 1979 through 1981. The program was discontinued, however, in 1981 due to lack of funds. This initial survey revealed a highly diverse recreational fishery, ranging from capital intensive offshore fishing for large pelagic species (marlin, sailfish, etc.) to single individuals fishing with simple hand lines along the edges of coastal lagoons.

There also exists within the recreational fishery in these areas a pronounced subsistence fishery, in which the primary goal is to catch fish for personal consumption, rather than a recreational experience that also produces food, yet not a true commercial endeavor to produce income. This subsistence fishery can be difficult to distinguish from the recreational fishery.

Although this option is for a survey of the marine recreational fisheries of the U.S. Caribbean and Pacific Territories, these areas differ greatly. Puerto Rico has a population of over 3.5 million individuals, with a distinctly urban population. American Samoa and the Commonwealth of the Northern Mariana Islands (CNMI) each have only approximately 60 thousand individuals. Given the unique environments and the diverse range of recreational fishing activities, flexibility and alternate methods will be essential in the implementation of the U.S. Caribbean and Western Pacific option. In the standard MRFSS survey design, intercepts of fishermen provide information on catch and catch per unit of effort, while telephone surveys of coastal households produce estimates of fishing effort. Lack of telephone ownership may affect the accuracy of effort estimates made through the telephone survey. Some Territories have extensive telephone systems and as much of 80% of urban areas have telephones; however, the percentage of telephone coverage within rural areas may be so low as to not yield statistically viable effort estimates. Flexibility will also be required on the intercept interview to deal with subsistence definitions. Initial definitions may need to be changed as field experience is gained.

In an attempt to assess the impact of any reduction of telephone ownership within these populations and to minimize any bias of estimating fishing effort due to reduced telephone coverage, the telephone survey will be augmented with a bus route roving survey to determine alternate estimates of fishing activity among all identified sites. The bus route method allows for numerous sites to be visited by schedule over a short period of time. The primary sample unit will be an 8-hour day, with the secondary sampling unit being a 4 hour block or "shift." Travel time between sites will be measured to determine the "waiting time" to be spent at each selected site. During this waiting time, fishing effort (such as the number of boat trailers, number of anglers, etc.) will be enumerated. The bus route method is described in Pollock et. al. (1994).

The Contractor should be willing to modify, in consultation with the NMFS, the survey to collect the information in a statistically valid manner within the cultural environment of the Territories. In

some of these Territories, local government agencies may have already established some form of a recreational fishery survey. The MRFSS should not be seen unnecessarily as being in competition with existing fisheries survey conducted by Territorial government agencies. Local surveys will need to be reviewed in context of the MRFSS to identify survey components that are shared or that are fundamentally different. Understanding the similarities and differences may enable joint collection and analysis of data, and more cost-efficient data collection.

## GENERAL REQUIREMENTS

### 1.0 The Survey

The U.S. Caribbean and Pacific Territorial Surveys shall consist of the following components:

1. A field **intercept survey** to collect data needed for bimonthly estimation of (a) the catch and harvest of anglers in each mode (i.e., shore, private boat and head/charter boat) and (b) the average catch per trip for all modes participating in the recreational fishery;
2. A **telephone survey** to collect data needed for bimonthly estimation of the number of fishing trips taken by all anglers within the previous two months; and
3. A **bus route roving survey** of shore line access sites and marine facilities as a means to estimate fishing pressure by mode.

### 1.1 Sample Allocations

Territories composed of several islands should have the individual islands sampled in proportion to the fishing effort of those islands. Initial proportions will be estimated by the NMFS using old 1979-1981 MRFSS effort estimates, results of current territorial surveys, and from the site register, once it is developed. Example sample sizes for the intercept and telephone surveys are shown in Tables C.1 and C.2. Table C.3 shows an example sample size for the bus route roving counts.

All other MRFSS requirements for the routine intercept and telephone interviews sample allocation and tracking are outlined in the MRFSS Statement of Work and the Procedures Manual and are incorporated here by reference.

### 1.2 Subsistence versus Recreational

In the Northeast, the flexible questions were used to probe for subsistence issues in 1996-1997. The questions on subsistence were phrased as:

"To what extent would you say your household's fishing and gathering of marine resources are characterized by recreation (that is, primarily for enjoyment) or by subsistence (that is, as a source

of food or income)? Would you say your fishing and gathering activities are for..

- ▶ all subsistence
- ▶ mostly subsistence
- ▶ both subsistence and recreation
- ▶ mostly recreation,
- ▶ all recreation, or
- ▶ Don't know."

and

"How many members of your household are commercial fishermen?"

Both the telephone and intercept interviews will include these types of questions. The actual phrasing of the questions will be developed by the Intercept and Telephone Contractors in cooperation with the NMFS, and in consultation with NMFS and territorial fishery biologists who work in the islands.

## **2.0 Intercept Data Collection**

The MRFSS Intercept Contractor will conduct the MRFSS Intercept interviews for this option. The Intercept Contractor shall work with the territorial governments to ensure coordination or integration with existing surveys. All routine MRFSS requirements for the routine intercept interviews are outlined in the MRFSS Statement of Work and the Procedures Manual and are incorporated here by reference. In addition to the routine MRFSS requirements, the Intercept Contractor shall perform the following tasks:

1. Development, in cooperation with the NMFS, of definitions of subsistence versus pure recreational fishing and possible adaptation of disposition codes to accommodate this separation;
2. The development of a site register, identifying all fishing sites by different modes with associated estimates of fishing pressure;
3. Implementation of the bus route roving method of access points;
4. The modification of all survey documents (data sheets, manuals, etc.) necessary to conduct this option in areas where English may not be the predominant language.
5. Hiring, training, deployment and supervision of field interviewers who possess sufficient language skills to successfully communicate with local residents. (English and Spanish in Puerto Rico and the U.S. Virgin Islands; English, Chamorro and Carolinian in the CNMI; English and Chamorro in Guam; and English and Samoan in American Samoa).

Table C.1 shows the approximate intercept sample allocations for territories where a pilot study may be undertaken. This table shows the numbers of interviews allocated in each state, mode and wave. For the intercept survey, the sample sizes are the numbers of anglers interviewed.

### 3.0 Telephone Data Collection

The MRFSS Telephone Contractor will conduct the Telephone survey portion of this option in order to maintain comparability with the rest of the continental MRFSS survey. All routine MRFSS requirements for the routine telephone interviews are outlined in the MRFSS Statement of Work and the Procedures Manual and are incorporated here by reference. In addition to the routine MRFSS requirements, the Telephone Contractor shall perform the following tasks:

1. Development, in cooperation with the NMFS, of definitions of subsistence versus pure recreational fishing and possible adaptation of disposition codes to accommodate this separation;
2. The modification of the CATI system and all survey documents (data sheets, manuals, etc.) necessary to conduct this option in areas where English may not be the predominant language.
3. Hiring, training, deployment and supervision of telephone interviewers who possess sufficient language skills to successfully communicate with local residents. (English and Spanish in Puerto Rico and the U.S. Virgin Islands; English, Chamorro and Carolinian in the CNMI; English and Chamorro in Guam; and English and Samoan in American Samoa).

Table C.2 shows the approximate telephone sample allocations for territories where a pilot study may be undertaken. This table shows the numbers of interviews allocated in each state and wave. For the telephone survey, the sample size is the number of unique interviews with households, and does not include no answer/busy, refusal, or businesses.

### 4.0 Bus Route Roving Survey

The Intercept Contractor will conduct the bus route roving count pilot survey. A survey of a recreational fishery with numerous access points can be covered using a "Bus Route Method," in which various measures of fishing effort, such as direct counts of anglers, boat trailers, empty sportfishing boat slips, etc. can be counted. Averages of these counts can then be expanded by the number of days in the survey period to obtain an estimate of fishing effort.

For each specific bus route, the travel time between the access sites identified in the site register will be measured and recorded in a "time frame" to determine the remaining time in that day to be spent at access sites. An initial survey of the access sites will measure the travel times and expected fishing effort of each site based on the physical features and prior knowledge of each site. The results of the initial survey will be used to apportion time spent at each site. Travel times will be measured for appropriate driving conditions, and will include time needed to load and unload equipment. A cumulative route schedule will be developed listing the minutes spent at the first access point and spent traveling and working at all other sites in that day. An 8 hour day will then have 480 minutes listed in its cumulative route schedule.

Each daily schedule will be produced by picking a starting point within the cumulative route schedule at random and beginning the run at that point. A random number is chosen between 0 and the maximum route time in minutes, and this number establishes the starting point in "route-minutes." As the route is described by unit of times and not distance, the selected starting point will be converted from a specific time to a specific access site where the survey will begin. Movement around the route from that point can be either clockwise or counterclockwise, chosen randomly.

For most of the smaller islands, the NMFS expects that a 1-day rove could cover the entire island; however, those islands may need to be partitioned into smaller routes to allow adequate time to count. Currently sample sizes are projected to be 8 per wave (Table C.3). If smaller routes are needed, the sample size will need to be increased accordingly. The estimated sample size of 20 roves per wave for Puerto Rico may also need adjustment if a single rove can adequately cover smaller or larger areas of the island.

The proportional split of roving counts into weekend and weekday counts will be developed by the NMFS, in cooperation with the contractor and other knowledgeable territorial scientists, based on all available data. The initial weekend/weekday split may need to be adjusted throughout the survey year as more accurate and complete information becomes available through actual roves.

The roving count interviewer will record their interviewer number, the site register number of each site counted, what type of count was conducted (people, boat trailers, empty boat slips, etc), the actual counts at the beginning and end of the site visit (if long visits are scheduled there may be periodic counts during the visit - every 15 minutes for example), and arrival and departure times to the minute. If adequate time exists during a site visit, the interviewer should ask parties that are exiting the site about their activity that day (were they recreational fishing, commercial fishing, pleasure boating, water skiing, etc). Tallies of people by activity type will be kept to help make better informed decisions about estimated pressures on the site register.

Training of interviewers in the appropriate methods of conducting the pilot bus route roving counts will be developed and implemented by the Intercept Contractor, subject to NMFS approval.

## **5.0 Reporting Requirements**

Data will be entered onto magnetic tape in a format provided by NMFS to the successful bidder. Data will be edited by the successful data collection Contractor for data entry errors and subjected to range and logic checks appropriate to the strata being sampled before delivery to NMFS. All edit programs are subject to approval by NMFS. Reporting requirements and periods of performance for the biological tasks are the same as those specified for the basic intercept interviewing tasks. Wave reports shall include tallies of the number of fish sampled by state, month, and species.

## **6.0 Data Transmittal**

For hard parts and lengths and weights, data can generally be recorded on small envelopes with hard parts sealed into the envelope. NMFS will conduct analysis of hard part and length/weight data and a mailing address for samples will be provided.

## **SECTION B: PERIOD OF PERFORMANCE**

The period of performance shall be on an annual basis as provided for the routine MRFSS in the Statement of Work for the 1999-2001 contract and is incorporated in this SOW by reference.

## **SECTION C: CONFIDENTIALITY**

The data collected for the U.S. Caribbean and Pacific Territorial Survey shall be used only for statistical purposes, and will be available in identifiable form only to NMFS and its contractors except as otherwise required by law. All requirements of the Privacy Act of 1974 (P.L. 93-579) concerning the collection and use of identifiable information for individuals shall be observed. All copies of the application forms shall be returned to the NMFS or destroyed at the COTR's direction upon completion of the survey.

## **LITERATURE CITED**

Pollock, K. H., C. M. Jones, and T. L. Brown. 1994. Angler survey methods and their applications in fisheries management. American Fisheries Society Special Publication 25.



Table C.1 Approximate sample allocations for intercept sampling.

		<b>Wave</b>					
<b>Territory</b>	<b>Mode</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Puerto Rico</b>	Party/Charter Boat	50	50	50	50	50	50
	Private/Rental Boat	200	200	200	200	200	200
	Shore	175	175	175	175	175	175
<b>U.S. Virgin Islands</b>	Party/Charter Boat	25	25	25	25	25	25
	Private/Rental Boat	100	100	100	100	100	100
	Shore	100	100	100	100	100	100
<b>Guam</b>	Party/Charter Boat	25	25	25	25	25	25
	Private/Rental Boat	100	100	100	100	100	100
	Shore	100	100	100	100	100	100
<b>CNMI</b>	Party/Charter Boat	25	25	25	25	25	25
	Private/Rental Boat	100	100	100	100	100	100
	Shore	100	100	100	100	100	100
<b>American Samoa</b>	Party/Charter Boat	25	25	25	25	25	25
	Private/Rental Boat	100	100	100	100	100	100
	Shore	100	100	100	100	100	100

Table C.2 Approximate sample allocations for telephone sampling.

	<b>Wave</b>					
<b>Territory</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Puerto Rico</b>	500	500	500	500	500	500
<b>U.S. Virgin Islands</b>	150	150	150	150	150	150
<b>Guam</b>	150	150	150	150	150	150
<b>CNMI</b>	150	150	150	150	150	150
<b>Samoa</b>	150	150	150	150	150	150

Table C.3 Approximate sample allocations for roving bus route sampling.

	<b>Wave</b>					
<b>Territory</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Puerto Rico</b>	20	20	20	20	20	20
<b>U.S. Virgin Islands</b>	8	8	8	8	8	8
<b>Guam</b>	8	8	8	8	8	8
<b>CNMI</b>	8	8	8	8	8	8
<b>Samoa</b>	8	8	8	8	8	8